

Engineering of Controlled Deamidation Rates in Peptides, Proteins, and Similar Structures

Abstract

Experiments that quantitatively determine the sequence dependence of deamidation and three-dimensional structure observations have been carried out. These experiments and theoretical computation methods based upon them, allow the invention of techniques for engineering of deamidation rates for amides in peptides, hormones and proteins as well as peptide-like, hormone-like and protein-like molecules. Modification of the amide, the residues or residue-like structures on either side of the amide or of other structural parameters can be carried out. This allows the stabilization of amides, the destabilization of amides, or the setting of amides to specific rates for use in engineering of molecules for pharmaceutical, industrial or other purposes. With modification this work may also be applied to the isomerization and racemization of carboxylic acids in similar ways.